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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,783	03/22/2004	Charles D. Emery	2003P18810US	9933

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Siemens Corporation
Intellectual Property Department
170 Wood Avenue South
Iselin, NJ 08830

EXAMINER

COOK, CHRISTOPHER L

ART UNIT	PAPER NUMBER
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3737

MAIL DATE	DELIVERY MODE
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06/24/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/805,783	Applicant(s) EMERY ET AL.	
	Examiner CHRISTOPHER COOK	Art Unit 3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to because Figs. 1 and 2 contain boxes which are not properly labeled. Reference numerals alone are considered insufficient.
2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: Paragraph [0009] discloses "The fluid operates to acoustically couple the transducer array with the patient..." However, it is unclear how that can be if the "fluid" is air. Also, Paragraph [0009] is incomplete.

Appropriate correction is required.

Claim Objections

4. Claims 1-18 are objected to because of the following informalities: Claims 1-18 are objected to because throughout the claims “transducer” should read “transducer array”. Claim 6 is objected to because in Line 1, “of” should be inserted before “said fluid”. Claims 7-8 are objected to because it is unclear as to what additional step has been set forth as the claims appear to be directed toward the structure of the system. Claim 18 is objected to because “said transducer module” lacks proper antecedent basis since it’s only inferentially set forth in the preamble, also, “said transducer” lacks proper antecedent basis. Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Specifically, Claims 1-18 disclose a "fluid" which according to the specification can be a solid, liquid or gas. Moreover, the specification further discloses in Paragraph [0009], “The fluid operates to acoustically couple the transducer array with

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the patient...” However, it is not clear how one of ordinary skill in the art would achieve this requirement if the “fluid” is a gas. Also, with regard to the “portions” limitations in Claims 1, 6, 11, 15 and 18, it is not shown or disclosed where these “portions” are within the housing or how they undergo such a phase change.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 3 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, it is unclear in Claim 3 initialization is required--then bypassed. It is unclear how it can be both required and bypassed. Regarding Claim 13, the term "comprising at least one" implies that the fluid mechanism includes more than one of the limitations disclosed in Claim 13. However, this is inconsistent with the specification which discloses a pump or a paddle or a rotor or an impeller or an eletrokinetic device.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

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the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,560,362 to *Silwa Jr. et al. "Silwa"* in view of U.S. Publication No. 2004/0215079 to *Omura et al. "Omura"*.

Regarding Claims 1-4, 6-8, 11-13, and 15-18 *Silwa* discloses a method and module for cooling an ultrasound transducer array (Abstract) comprising: immersing at least partially in a volume of "fluid" (air) a transducer array contained within a housing carried within a transducer case (Column 2, Lines 37-46; Column 3, Lines 18-49).

Silwa does not expressly disclose wherein the transducer array is immersed, at least partially, in a volume of fluid (liquid). Furthermore, *Silwa* does not expressly disclose inducing movement of a fluid within the housing and moving fluid from a first location to a second location.

Omura discloses a method wherein an ultrasound transducer is immersed in a volume of fluid within an enclosed housing (Paragraphs [0028] and [0059]). Furthermore, *Omura* discloses a step wherein a motor operatively connected to said transducer is configured to rotate the transducer which inherently induces a

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movement of the fluid from a first location to a second location (Paragraphs [0022]-[0023]).

Silwa and *Omura* are considered analogous art because they are both from the same field of endeavor with respect to using ultrasound transducers in a medical diagnostic setting.

Therefore, at the time of the invention, it would have been obvious to a person of ordinary skill in the art to have modified the method for cooling an ultrasound transducer array as disclosed by *Silwa* with a configuration comprising a step to immerse, at least partially, the transducer array in a volume of fluid and a motor configured to move the transducer array inducing movement of the fluid as described by *Omura* in order to effectively reduce the temperature of the ultrasound probe during a medical diagnostic procedure. Furthermore, it is considered a well known expedient in the art that a phase transition occurs for a substance when temperature rises and pressure is held constant.

As for Claims 5, 9-10, and 14, *Silwa* discloses the use of a temperature sensor disposed within the ultrasound probe and a controller coupled to the temperature sensor and a cooling device (Claim 90). As described above, *Omura* discloses a means for inducing movement within the transducer array housing (cooling device). Therefore, it would have been obvious to have coupled the temperature sensor with the fluid movement inducing means when a hazardous temperature is sensed in order to effectively reduce the temperature of an ultrasonic transducer array.

Response to Arguments

12. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER COOK whose telephone number is (571)270-7373. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on (571)272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. C./
Examiner, Art Unit 3737

/Ruth S. Smith/
Primary Examiner, Art Unit 3737

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